

AP Statistics Worksheet
Randomized, Comparative Experiments

Name: _____

1. A researcher wants to test the hypothesis that talking on a cell phone while driving distracts drivers. The researcher has “driving simulator” in which subjects can simulate driving a car, both talking on a cell phone and not talking on a cell phone. Design a randomized, comparative experiment. Make sure you can identify where **randomization** and **control** takes place.
2. A researcher at Ohio State University believes that a certain component of ant venom can be used to lessen the amount of swelling in the knuckles of people suffering from arthritis. The ant venom treatment has been made into a capsule form that can be swallowed.
 - a. Explain how you would design an experiment to investigate whether this new treatment, when taken orally each day for one week, causes a lower degree of swelling in arthritis sufferers. Assume that 200 people suffering from arthritis have already volunteered to be experimental subjects. (also include a diagram)
 - b. Identify the explanatory and response variable in your experiment
3. Older women often suffer from osteoporosis, weakening of the bones leading to frequent fractures. An article in a recent issue of the *Journal of the American Medical Association* describes an experiment to see if treatment with the drug raloxifene reduces bone fractures. Here is part of the summary (abstract) of the article:

Design: *The Multiple Outcomes of raloxifene Evaluation (MORE) study, a multicenter, randomized, blinded, placebo-controlled trial.*

Setting and Participants: *A total of 7705 women, aged 31 to 80 years in 25 countries who had been postmenopausal for at least 2 years and who met World Health Organization criteria for having osteoporosis.*

Intervention: *Participants were randomized to 60 mg/d or 120 mg/d of raloxifene or to identically appearing placebo pills.*

- a. Use a diagram to outline the design of this experiment. Be sure to show the treatments and response variable.
- b. How would you assign labels to the subjects in order to carry out the randomization? Use the table below to select only the first five subjects to receive 60 mg per day of raloxifene.

19223	95034	05766	28713	96409	12531	42544	82853
73676	47150	99400	01927	27754	42648	82425	36290
45467	71709	77558	00095	32863	29485	82226	90056
52711	38889	93074	60227	40011	85848	48767	52573